REMARKS/ARGUMENTS

The Examiner is thanked for the review of the application.

Claims 1-14, 18-23 remain in this application. Claims 1, 8, 18, 21 have been amended. New Claims 24, 25 are added. No new matter has been added.

In the Office Action dated September 6, 2006, the Examiner has rejected Claims 1-14 and 18-23 under 35 U.S.C. 112, first paragraph stating that they fail "to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, independent claims 1 and 8 include the following recitation, which is not supported by the specification: 'wherein the demand group structure of the plurality of products is based on substitutable products'."

Support in Claim 1 and 8 for "wherein the demand group structure of the plurality of products is based on substitutable products" can be found on page 8, lines 3-8 of co-pending U.S. Patent Application No. 10/007,002, which as been incorporated by reference, which states:

> "To facilitate understanding, FIG. 7 is an overall flow chart of a process that uses subset optimization 700. First, a product category is optimized (step 701). A demand group is defined as a set of products that are substitutes or near substitutes for each other. A product can belong to only one demand group. A product category consists of one or more demand groups." (emphasis added).

Applicants respectfully submit that the present invention and the co-pending application are both directed at price optimization. The present invention focuses primarily on forming store clusters for optimizations, while the co-pending application focuses primarily on price optimization for subsets of a plurality of products. Accordingly, since this limitation of Claims 1, 8 is directed at

"the plurality of products", the combination of the two specifications (via incorporation by reference) provides adequate support for the limitation.

The Examiner has also rejected Claims 18 and 21 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding this rejection the Examiner has stated that "Claims 18 and 21 are confusing, because the following recitation: 'wherein the at least one constrain prohibits two stores of the plurality of stores from being in the same cluster' is in contradiction to parent Claims 5 and 12, which recite: 'placing stores that meet the constraints and with the closest optimal combinations in the same cluster of the plurality of store clusters'."

Both Claims 18 and 21 have been amended to depend on base Claim 1 and 8, respectively, and now is in compliance with 35 U.S.C. 112, second paragraph.

The Examiner has rejected Claims 1-7 and 18-20 under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Regarding this rejection the Examiner has stated that "the claims, as currently recited, appear to be directed to nothing more than a series of steps including collecting, optimizing, creating and re-optimizing data (prices) without any useful, concrete and tangible result and are therefore deemed to be non-statutory. While these numbers may be concrete and/or tangible, there does not appear to be any useful result. As per Claims 1-7 and 18-20 the invention, as defined by the claims and as best understood merely manipulate an abstract idea or perform a purely mathematical algorithm without any limitation to a practical application in the technological arts. The invention is implemented on a computer; therefore, the invention is directed to the technological arts. However, the claimed invention just manipulates data representing prices. The invention does not require physical acts to be performed outside the computer independent of and following the steps to be performed by a programmed computer, where those acts involve the manipulation of tangible physical objects and result in the object having a different physical attribute or structure…The steps of 're-optimizing' have no direct effect on the physical world outside the

computer. Thus, the claimed invention merely inputs data into the system and performs a mathematical algorithm without any limitation to a practical application as a result of the algorithm or outcome and is therefore deemed to be non-statutory."

Claims 1 and 14 have been amended to include "providing the re-optimized prices to the at least one of the plurality of store clusters" and now comply with 35 U.S.C. 101. Support for "providing …" can be found on page 1, lines 18, 19 which states "present invention relates to providing price clusters for a plurality of stores" and again on page 5, lines 4-8 which states:

> "Since optimization may be a complex process, the optimal result may not be the absolute best result but may be a localized best result. Clusters of stores are then formed based on the closeness of the optimal combinations for each store (step 1012). New cluster based combinations are then provided (step 1016)."

The Examiner has rejected Claims 1-14 and 18-23 under 35 U.S.C. 103(a) as being unpatentable over Woo et al. (US 6,910,017) in view of Jameson (US 6,219,649) and further in view of Lange et al. (US 2004/0111358).

Regarding Claims 1 and 8 the Examiner has stated that "Woo et al. (Woo) teaches a computer-implemented method and system for optimizing prices, comprising: collecting store specific information from a plurality of stores (C. 3, L. 64-67; C. 4, L. 1-47); optimizing prices for a plurality of products for each individual store of the plurality of stores, and wherein the price optimization uses demand coefficients, cost coefficients and optimization rules (modeling equations) (C. 3, L. 5; C. 4, L. 1-47; C. 5, L. 65 – C. 6, L. 60; C. 7, L. 58-65); creating a plurality of store clusters from the plurality of stores based on the closeness of the optimized prices of the plurality of products for each individual store (aggregating historical data into item classes and subclasses in accordance with an item hierarchy/parameter (C3 L64-67, C4 L1-47; C. 3, L. 5), based on store specific information, and based on demand group structure of the plurality of products, and using said aggregated data, including demand and cost of sales information, to determine optimal pricing information (C. 2, L. 53-67; C. 3, L. 1-63; C. 9, L. 15-38). While method steps disclosed in Woo

indicate a continuation of the method, Woo does not explicitly teach re-optimizing step for re-optimizing prices for said store clusters. Also, Woo does not specifically teach that the demand is based on substitutable products. Jameson teaches a computer-implemented method and system for price optimization, comprising: conducting initial price optimization to generate individual optimized scenarios (allocations) based on collected data and objective functions (specified parameters or constraints); grouping into clusters said allocations and identifying the allocations within each cluster that perform best against scenarios within the cluster (C. 5, L. 41-49); and re-optimizing said individual scenarios with their objective functions for deviating from the average allocation (C. 3, L. 48-57; C. 9, L. 20-45). Furthermore, FIG. 2 in Jameson shows how individual-scenario optimizations can serve as good starting points for finding an overall optimal allocation and how clustering can facilitate optimization (C. 7, L. 60-62). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Woo to include re-optimizing step for re-optimizing prices for said store clusters, as disclosed in Jameson, because it would advantageously allow to conduct price optimization considering uncertain constraints (Jameson; C.5, L. 16-18). Lange et al. (Lange) teaches analysis of price optimization techniques, and discloses calculating demand and cross-demand elasticities, which are the percentage changes in prices due to percentage changes in quantity demanded for a given good or its substitute (cross-demand elasticity) [0799]. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Woo and Jameson to include that the demand is based on substitutable products, as disclosed in Lange, because the use of statistical tools would advantageously enhance the accuracy of said optimization process."

Applicants respectfully submit that none of the cited references Woo et al. (US 6,910,017) in view of Jameson (US 6,219,649) and Lange et al. (US 2004/0111358), disclose or suggest the present invention, alone or in combination, as recited in base Claim 1 and 8, for the following reasons.

Applicants' base Claims 1 and 8 recite a novel combination of at least four distinct steps as summarized below:

1) **collect store specific information** from a plurality of stores;
2) **optimize prices** for a plurality of products at the **individual store level** using:
    a. demand coefficients,
    b. cost coefficients, and
    c. optimization rules;
3) **create** a plurality of **store clusters** from the plurality of stores based on:
    a. **closeness** of the **optimized prices** at the **individual store level**,
    b. store specific information, and
    c. demand group structure based on substitutable products; and
4) **re-optimize prices** for the **store clusters**.

In contrast, Woo '017 appears to teach away from the present invention by disclosing a **SINGLE** central **optimization** technique (see Col. 7, line 58-60, Abstract, Summary & Claim 1):

1) **collect historical data including prices and sales of items** of commerce for a succession of time periods;
2) **aggregate historical data** to **improve signal-to-noise** ratio by:
    a. time period hierarchy
    b. item hierarchy, and
    c. location hierarchy;
3) develop predictive model equation(s) from the aggregated data;
4) **predict maximum profit** by a **[single] optimization** of price or inventory or both over time in accordance with:
    a. the relationship between variations of sales of the items as a **function of price over time**; and
5) using the optimization to make price decisions with respect to marketing of the items.

Woo's **single central optimization** of all Stores can produce very different results from **Applicants**' optimization at the **individual store** level followed by re-optimization at the **store cluster** level. This is because a single central optimization will trade off profit/loss of the Stores against each other in order to maximize overall profit. For example, in a central optimization of all Stores, if raising the price of item "X" at all Stores marginally increases the profit of Stores "A" and "B" but substantially decreases the profit of all the other Stores, then the price of item "X" will not be increased in order not to reduce the overall profit of all the Stores.

In contrast, Applicants' invention advantageously teaches optimization of prices initially at the individual store level in order to form optimal store clusters, and then followed by a re-optimization of the prices at the store cluster level. In other words, using the same example, Applicants' more flexible invention permits increasing the price of item "X" in the store cluster which includes Stores "A" and "B" thereby optimizing the profit of the store cluster, while being able to hold the price of item "X" in all the other store clusters, thereby avoiding the reduction of overall profit.

In addition, Woo's aggregation of the historical data is for the purpose of enhancing the signal to noise level thereby "making it easier to derive information about patterns inherent in the [historical] data" (see Col. 2, lines 7-10, and Col. 3, lines 1-4). In contrast, Applicant clustering of stores using optimized prices from individual stores is for the purpose of maximizing profit at the store cluster level which is accomplished by re-optimizing prices at the store cluster level. Hence, Woo appears to aggregate unprocessed historical data for further processing which is very different from the present invention's formation of store clusters using highly processed optimized prices.

As for Jameson '649, Jameson discloses optimization of resource allocations using clusters to "divide the allocation problem into simpler sub-problems, for which determining optimal allocations is simpler and faster", and hence appears to be **unrelated** to the field of price optimization (see Abstract, Summary in Col. 5 and Fig 1).

Instead, Jameson teaches:

1) generate scenarios and **optimize scenario allocations**;
2) form **clusters of resource allocations**;
3) identify allocations within each cluster that perform best against the scenarios within each cluster; and
4) **group clusters [of allocations]** into larger clusters and **continue processing**.

Hence, Jameson does not appear to teach or suggest the present invention as recited by Claims 1 and 8. Accordingly, for these reasons and the reasons discussed above, even if one was to combine all three cited references, the resulting combination will not render Claims 1 and 8 unpatentable.

Moreover, Applicants also respectfully submit that Woo is not combinable as a matter of art with Jameson. Woo '017 teaches a single price optimization for maximizing profit using historical data. In contrast, Jameson '649 discloses the optimization of resource allocation for the purpose of capacity planning, organizational resource allocation, and financial optimization. For example, Applicants believe that Jameson teaches solutions for problems such as allocating limited resources to acquire goods/services from a purchaser's perspective, where one may not necessarily have control over the prices of these goods/services. Accordingly, Jameson does not appear to teach or suggest any form of price optimization for increasing profit as disclosed by Woo. With such a fundamental difference of methodology, it is clear that the methods disclosed by Woo and Jameson, are incompatible methods and thus not combinable.

The Examiner also rejected dependent Claims 2-7, 9-14, 18-23 under 35 U.S.C. 103(a). In view of the discussion regarding base Claims 1 and 8 above, the Examiner rejection of these dependent claims is now moot.

New dependent Claims 24, 25 have been added. Support can be found in the specification as amended above, on page 9.

In sum, base Claims 1, 8 have been amended and are now believed to be allowable. Dependent Claims 18, 21 have been amended and are now believed to be in allowable form. New Claims 24, 25 have been added. Dependent claims 2-7, 9-14, 18-25 which depend therefrom are also believed to be allowable as being dependent from their respective patentable parent Claims 1, 8 for at least the same reasons. Hence, Applicants believe that all pending claims 1-14, 18-25 are now allowable over the cited art and are also in allowable form and respectfully request a Notice of Allowance for this application from the Examiner.

Applicants hereby petition for a two-month extension of time within which to respond to the referenced Office Action and has authorized the commissioner via EFS to charge our Credit Card in the amount of $450.00 to cover this extension fee. The commissioner is authorized to charge any additional fees that may be due to our Deposit Account No. 50-2766 (Order No. DEM1P010). Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at telephone number 925-570-8198.

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